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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/826,582	04/16/2004	Rolf Pfeifer	3926.081	1763

30448 7590 11/27/2006

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EXAMINER	
LIN, ING HOUR	

ART UNIT	PAPER NUMBER
1725	

DATE MAILED: 11/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/826,582	PFEIFER ET AL.	
	Examiner	Art Unit	
	Ing-Hour Lin	1725	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 September 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *21-40* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *21-40* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 21-22, 25-27, and 30-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Langer et al in view of Kriechbaum et al.

Langer et al (col. 3 lines 14+) teach the claimed casting mold and insert (core) for casting metals including porous ceramic produced by selectively sintering on binder coated ceramic particles, and teach methods of producing a green casting mold by rapid prototyping method including 3D-CAD construction (col. 9, lines 23+), comprising: coating polymer binder on a powder layer 6a-6d of ceramic particles (curable molding material 3 including zirconium oxide (ziconic sand and silica sand), deposited on the support plate 5 (see Fig. 8); and laser sintering on

the powder layer of the coated ceramic particles. Langer et al fail to teach the use of castable refractory composition.

However, Kriechbaum et al (col. 3, lines 3+) teaches the use of castable refractory composition having mixture including 50-90 vol% coarse alumina particulates having well known high thermal coefficient of expansion of (7-8x 10^{-1} C^{-1} or 8-10x 10^{-1} K^{-1}) and having a particles size between 1 and 60mm and 10-40 vol% fine alumina silicates particle of size between 0.1 micron and 3 mm, wherein the submicron particle having well known lower sintering temperature of 200° C below the sintering temperature of alumina particles with size above 1 micron having sintering temperature over 1500° C, and slurry including controlled amount of water for the purpose of filling the voids or porosities between the coarse particles in order to reducing drying time and drying shrinkage of the castable refractory. It would have been obvious to one having ordinary skill in the art to provide Langer et al the use of castable refractory composition as taught by Kriechbaum et al in order to effectively reducing sintering temperature in rapid prototyping process and reduce sintering shrinkage and produce porous moldings having quality of precision.

5. Claims 23-24 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Langer et al in view of Kriechbaum et al and further in view of either Zoia et al or Smith et al.

Langer et al in view of Kriechbaum et al fails to teach the use of optimal design including reinforcing ribs and cooling channels and support including back-fed ceramic material.

However, Zoia et al (col. 3, lines 3+) teach the use of optimal design including reinforcing ribs 100 and cooling channels for the purpose of controlling both strength and

structure. Smith et al (col.4, lines 10+) teach the support including back-fed ceramic material such as unconsolidated mold 41 formed from alumina for the purpose of supporting the mold during casting. It would have been obvious to one having ordinary skill in the art to provide Langer et al in view of Kriechbaum et al the use of optimal design including reinforcing ribs and cooling channels as taught by Zoia et al in order to effectively control both strength and structure and the use of support including back-fed ceramic material as taught by Smith et al in order to effectively support the mold during casting.

6. Claims 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Langer et al in view of Kriechbaum et al and further in view of Kington.

Langer et al in view of Goldsmith fails to teach the use of matching the coefficient of thermal expansion between the casting mold and the supper alloys to be cast in the mold.

However, Kington (col. 1, lines 43+) teaches the use of matching the coefficient of thermal expansion between the casting mold and the Ni-supper alloys to be cast in the mold for the purpose of preventing porosity in the cast alloys. It would have been obvious to one having ordinary skill in the art to provide Langer et al in view of Kriechbaum et al the use of matching the coefficient of thermal expansion between the casting mold and the Ni-supper alloys to be cast in the mold as taught by Kington in order to prevent porosity in the cast alloys.

Response to Arguments

7. Applicant's arguments with respect to claims21-40 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ing-Hour Lin whose telephone number is (571) 272-1180. The examiner can normally be reached on M-F (9:00-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

I.-H. Lin

11/21/06

KEVIN KERNS
PRIMARY EXAMINER

Kevin Kerns 11/22/06